

SECRETNPIC/TSSG/RED/ATB-052/70
6 March 1970

MEMORANDUM FOR THE RECORD

SUBJECT: Present Capabilities of the Exploratory Lab to Measure and Specify Colors

1. The minimum data needed to completely specify a color are its CIE color coordinates and its luminous transmittance. These values can be determined by several methods. The first is by the use of a colorimeter, a second is from spectral transmission curves and a third technique is to match the Equivalent Neutral Densities of the unknown color patch with the E.N.D.'s of a color patch with known CIE color coordinates.

2. The Exploratory Laboratory has a [] 450-U spectrophotometer. With this instrument the spectral transmission of a color patch of moderate size can be measured. This data can be processed by a [] 848-3 and the CIE color coordinates and the luminous transmittance of the color patch are output.

3. Using a [] TO-404 densitometer with status "A" filters which is in APSD the Exploratory Laboratory can read the red, green, and blue densities of a color patch on SO-242 of at least four millimeters diameter. Using a conversion matrix the E.N.D.'s of the three individual dye layers of SO-242 can be determined. With the completion of the Color Gamut program the Lab will have a table with which these values can be related to CIE color coordinates.

4. The Exploratory Lab also has a computer program that generates the theoretical color gamut of any tri-pack film given the spectral densities of each of the three layers. It is anticipated that with more of a data base the program can be easily modified to agree more accurately with the actual color gamut.

5. Also undergoing work in the Lab is a program for the [] 848-3 to compute the color difference between two color patches with known CIE color coordinates and luminous transmittances.

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